

## Travel Model Improvement Program Webinar

### Dynamic Traffic Assignment Session #2: Putting DTA to Work

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**Question:** how do you recognize noise (pdf p.7, 2nd slide)?

**Answer:** Noise is measured through a series of controlled changes in the inputs. In the assignment context, a noise is the amount of volume change that is unrelated to the controlled change.

**Question:** What software are you using to implement DTA?

**Answer:** UT uses an academic version of VISTA.

**Question:** how do you reduce the noise in the assignment?

**Answer:** currently, feed backs and small UE GAP

**Question:** how small a gap 0.001, 0.0001?

**Answer:** 1/10,000

**Question:** Would you consider "hybrid" modeling for such a huge region as your MPO. [Some tools] accomplish fully integrated macro, meso, and micro modeling within one network.

**Answer:** We may. But I am not sure how that works. When we know more about simpler approaches that may not work, we will go to harder approached that may work!

**Question:** what additional measures are you using to calibrate the model besides screening line, travel time, PRMSE?

**Answer:** Those are the main in the assignment step but some come in time periods.

**Question:** What are the difficulties for DTA implementation in 4-step models?

**Answer:** The current largest difficulty is the need for time-varying O-D tables. Configuring scenario-specific traffic controls is also a current, significant difficulty.

**Question:** What data are collected specifically for DTA?

**Answer:** Time of day count and travel time

**Question:** Has anyone compared the DTA model results with the UE results to prove the DTA results is better such as measured by PRMSE?

**Answer:** We will do that. A test has been done in Austin and those, who did it, claim that it is much better. We will do our own tests.

**Question:** How to differentiate proper response from noise? Statistical method?

**Answer:** Briefly, no noise happens at zero convergence criteria in UE. Anything beyond that is a noise. Our tests are not statistical yet.

**Question:** Am I correct that the level of "noise in the model is indicated by the convergence level?

**Answer:** Yes. At least assignment noises are if the method of assignment is proper for the project.

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**Question:** What is the size of the budget for the U Texas research on DTA?

**Answer:** 50k for a year

**Question:** Is your regional model in reference to MWCOC's regular network?

**Answer:** Yes, we started with MWCOC's regional network

**Question:** What software was used for the analysis and what data was used for calibration?

**Answer:** [TRANSIMS was the primary network analysis tool used for the White House Area Transportation Study.] Primary calibration data included volumes, travel times, and queuing. We also made lots of observations on transit loading rates, vehicle capacity, and speeds.

**Question,** Would you agree that DTA is probably not worth the effort in an area that basically has no congestion? My feeling is that a static UE will probably suffice for your modeling if you have no congestion.

**Answer:** It depends on what types of growth you anticipate and what types of questions you are trying to answer. I wouldn't categorically rule out a method without considering a range of factors.

**Question:** The "DTA" you refer to sounds like the function in [another modeling package]. The incremental loading doesn't make sense to me. Could you explain?

**Answer:** Well, we tried making some wholesale signal timing improvements in the PM peak. When we introduced them all at one time, the model underwent large oscillations. It would have taken a large number of iterations for the model to re-stabilize. Too many travelers tried to take advantage of travel time savings. We ended up changing signal timing one or two intersections at a time. Incrementally loading the improvements onto the network eliminated the problem.

**Question:** Jana, could you please reply me privately on what's the DTA software package you used? Thank you!

**Answer:** [DYNAMEQ]

**Question:** Supposedly, the iteration of the DTA model should be able to converge based on the relative gap even when travelers try to be selfish, should it?

**Answer:** Yes. The slide with 4 graphs show that it takes time to reach a stable condition, even when approaching convergence. In one case, the network really wasn't able to accommodate the demand, so convergence was problematic without fundamentally altering the trip tables, which we were trying to keep constant in an overall sense between the alternatives.

**Question:** How does the feedback between micro and macro models work? Do the simulation results influence the OD tables?

**Answer:** Feedback was actually from micro back to DTA model. OD is calibrated at the mesoscopic level using a calibration tool. Once the DTA model is calibrated, the paths and flows are fixed when converted to the micro level.

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**Question:** How long to build a model for each case?

**Answer:** The length of time needed to build a model for each case study varied. For the truck lanes restriction project, an integration tool was used to convert the DTA model to microscopic simulation model. Each model (AM peak, PM peak, and mid-day) conversion took a couple of days to build. Calibration took another 3-4 weeks and was primarily checking the consistency between DTA and micro in addition to doing final calibration. The other case studies were converted manually so models took considerably longer (3 months) to change over from DTA meso to micro.

[Jeff used DYNASMART-P and DynusT for this work.]